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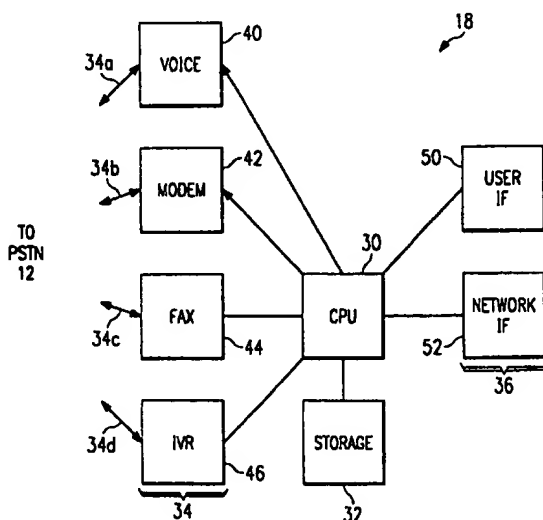
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(54) Title: COMMUNICATIONS SYSTEM FOR A SERVICE PROVIDER



(57) Abstract

An integrated, electronic communications system (18) that provides an intelligent interface between a client, a service provider and a network. The system (18) includes a storage device (32) for storing appointment schedules and an interactive voice response unit ("IVR" 46) for interfacing with the client. The IVR (46) enables the client to schedule an appointment either by selecting or submitting his own appointment. The system (18) can confirm an appointment, provide information about the client to the service provider or provide voice mail interaction between the client or the service provider. The system (18) includes a time measurement device (30) that records call duration for an interaction between the service provider and the client for purposes such as billing. The interaction may be a telephone appointment, an in-person appointment, or a voice mail transaction.

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## COMMUNICATIONS SYSTEM FOR A SERVICE PROVIDER

### Technical Field

This invention relates generally to user and electronic interface systems, and in particular, to the utilization of an integrated, electronic communications system for interfacing a service provider and a client with telephony and data networks.

### 5 Background of the Invention

The remote accessibility of people and information is continually increasing. A person now has at his disposal many different communication devices, such as a telephone, cellular telephone, pager, facsimile, and e-mail. However, despite the benefits of accessibility, being easily accessible often becomes difficult to manage or  
10 even burdensome, especially for service providers. For example, doctors are now readily accessible, such as through a simple telephone call. However, by answering and responding to each such call, a doctor has little time to tend to the patients in his office. Therefore, the doctor must balance the responsibilities of being accessible to callers while still providing prompt and timely service to the patients in his office.  
15 One solution to this problem is to have a staff member schedule times that the doctor can call back the patient. But the cost of a staff member to perform this task can be too expensive.

In addition to upsetting his and his patient's schedules, the doctor is typically not reimbursed for the time that he and/or his staff spend on the telephone.  
20 Although most patients would not like to be charged for telephone calls, in actuality they are indirectly paying for each call. For example, the doctor is forced to adjust his rates to account for the time taken to handle these calls. Also, the excessive time some patients spend waiting in the doctor's office is directly attributable to such calls. To resolve this dilemma, some doctors have tried to charge callers for receiving calls.  
25 However, there are many problems associated with charging for small increments of time. For one, there is no accurate way to track the time for each call that is reliable and accepted by most insurance companies or Medicare. Also, the amount of time for a person to prepare, calculate and bill for the calls negates any benefits from billing.

Therefore, what is needed is a system that allows the doctor to easily and  
30 automatically schedule call back times.

Furthermore what is needed is a system that keeps track of telephone time and other small charges and bills patients accordingly.

**Summary of the Invention**

In response to such difficulties, a technical advance is achieved by providing an integrated, electronic communications system and method that provides an intelligent interface between a client, a service provider and a data network and/or a telephone network. In one embodiment, the system includes a storage device for storing a schedule of the service provider and an interactive voice response unit ("IVR") for interfacing with the client. The client may call into the IVR and through a series of menus, select an available appointment from the schedule. The system then notifies the service provider that an appointment has been established. The system may also provide information about the client to the service provider for use during the appointment. In addition, the system allows the client to leave voice mail messages and/or retrieve messages from the service provider.

In another embodiment, the system includes a time measurement device that records a length of time for an interaction between the client and service provider. The interaction may be a telephone appointment, an in-person appointment, or a voice mail transaction. The length of time is then available for such purposes as billing the client for the interaction.

**Brief Description of the Drawings**

Fig. 1 provides a block diagram of a communication network employing one embodiment of the present invention.

Fig. 2 provides a block diagram of a doctor care unit used in the communication network of Fig. 1.

Fig. 3 provides a block diagram of a service care network used in the communication network of Fig. 1.

Figs. 4a-4d are a flowchart of a caller interface routine performed by the doctor care unit of Fig. 2.

Fig. 5 is a flowchart of a doctor interface routine performed by the doctor care unit of Fig. 2.

Fig. 6 is a sample display provided by the doctor interface routine of Fig. 5.

**Description of the Preferred Embodiment**

Referring to Fig. 1, the reference numeral 10 designates a communication network including a public switched telephone network ("PSTN") 12. Connected to the PSTN 12 are a user 14, a service center network ("SCN") 16, a doctor care unit ("DCU") 18, a laboratory ("lab") 22, a payment clearing house 24, and a pharmacy 26.

The user may interact with the PSTN 12 through a telephone 14a, a fax machine

14b, or a personal computer ("PC") 14c. It is understood that the items, and their quantities, represent many different ways to implement the present invention.

Referring to Fig. 2, the DCU 18 includes a processor 30, a storage device 32, and two interface sections 34, 36. The interface section 34 allows the DCU 18 to communicate through the PSTN 12 and includes a voice card 40, a modem 42, a fax card 44, and an interactive voice response ("IVR") 46. The interface section 36 includes a user interface device 50, such as a keyboard and monitor, and a network interface device 52, such as an Ethernet card.

The DCU 18 is stationed at a service provider's facility, such as a doctor's office. Many hardware components are those of a conventional personal computer. Furthermore, it is understood that several components that are separately illustrated may alternatively be performed by a single component. For example, the interface section 34 is connected to the PSTN 12 through four conventional phone lines 34a, 34b, 34c, 34d. However, a single component may perform many different functions, such as a fax/modem device, and thereby allow fewer phone lines. Furthermore, a single phone line may be multiplexed to each component of the interface section 34. Further still, the modem 42 may be used to support remote access by the doctor to the DCU 18, such as through a wide area network (not shown).

The user interface device 50 may be used directly by individuals at the doctor's office, but it is preferred that the DCU 18 operate as a server, accessible through the network interface device 52.

Referring to Fig. 3, the SCN 16 provides a network of servers, including a database server 60, an accounting server 62, a help desk computer 64, an e-mail server 66, a DCU server 68 and a clearing house server 70. The database server 60 contains information that is useful to the doctor's office, such as phone numbers and locations of the pharmacy 26 and lab 22 (Fig. 1). The accounting server 62 provides account information for the doctor's office itself, as well as the patients of the doctor's office. The help desk computer 64 allows the SCN 16 to access information from other servers and answer questions from different individuals. The e-mail server 66 can be used to allow internet access to the SCN 16. Although not shown, the present invention may also utilize a web site to answer questions and facilitate certain functions.

The DCU server 68 supports communication between the DCU 18 and the SCN 16. In the preferred embodiment, the DCU server 68 supports communication with many different DCU's, and may facilitate different communication protocols, as

required, from the different DCU's. The DCU server 68 may initiate calls to the DCU 18, or may receive calls from the DCU. The clearing house server 70 supports communication between the clearing house 24 and the SCN 16. In the preferred embodiment, the clearing house 24 is a financial institution such as a bank, credit card company, or insurance company. Alternatively, the doctor himself may provide his own payment options and therefore act as his own clearing house, or the clearing house 24 can verify or facilitate payments by and between the doctor's office and the patients.

It is understood that different combinations of the above-described servers may be produced to perform different or additional functionality. For example, the functions of several servers may be combined into one, the e-mail server functionality may be left off, or a fax server may be added.

With the above described communication network 10, many different functions are now possible. For the sake of example, a doctor using the DCU 18 may make information available for the user 14 to access. Also, the doctor may establish a voice communication path through the DCU 18 to the user 14 to have a telephone interview while the DCU performs certain services, including interactively providing information to the doctor that is specific to the user, interactively providing information from the lab 22 or pharmacy 26, and/or recording the length of the telephone interview in order to later charge the interview to the user or the clearing house 24. The routines described below illustrate some of these functionalities, it being understood that other functions are readily apparent from the above and following descriptions.

Referring to Figs. 4a-4d, a caller interface routine 100 is performed by the DCU 18 to interact with the user 14. In the present example, the user 14 represents a patient to a doctor's office in which the DCU 18 is located. Sample prompts shown in italics, one or more of which may be used by the routine 100, are also provided to better illustrate the functionality of the routine. The user 14 initiates the routine by placing a call to the DCU 18 through the PSTN 12. At step 102, the DCU 18 answers the call. At step 104, a determination is made as to the type of call.

*If you would like to proceed with a Telephone Visit, press [1]; if you would like to send a FAX, press [2]; to hear these choices again press [3].*

If the call is a voice call, execution proceeds to step 106 where an introduction voice message is provided to the user 14.

*Thank you for calling Dr. Black.'s office for a Telephone Visit. If you wish to schedule a regular office visit or if this is a medical emergency hang up and dial our main office number 555-1234 or 911.*

At step 108, the user 14 is requested to sign-in.

5 *Please enter the patient's 9 digit Social Security number.*

At step 110 a determination is made as to whether or not the user 14 is an authorized user. If the user 14 is not authorized, the routine 100 may instruct the user on how to become authorized, may give the user a second chance to sign in, or may simply terminate the call.

10 *Our system shows that your Credit Card is not valid as registered. Call our main office number 555-1234 during business hours. If you feel your urgent medical problem can not wait until the office opens, call another physician, dial 911, or go to the nearest hospital emergency room.*

If at step 110 it is determined that the user 14 is authorized, execution  
15 proceeds to step 112 in which a menu of options is provided to the user.

*To schedule a time for someone to call you back Press [1]; to leave a voice mail message now Press [2]; to retrieve a response from someone in the office, Press [3]; to hear these choices again please press [4]; to end this call, hang up.*

The user 14 is instructed that to select an option, he may press a corresponding key  
20 on his telephone. The options are described below in Table 1. In response to the user selection, the routine performs additional steps, also described below.

Table 1

Key	Option
1	the user 14 wishes to have a doctor call him back.
2	the user 14 wishes to leave a voice mail for a doctor or nurse.
3	the user 14 wishes to retrieve a response to a previous voice mail or other question.
4	the user 14 wishes to hear the options again.
5	the user 14 is ready to terminate the phone call.

If the user 14 presses the number "1" on his telephone, indicating that he  
30 wishes to have a doctor call him back, execution proceeds to step 120.

*To schedule a call back appointment with Dr. Black press [1], to schedule a call back appointment with a nurse or a physician assistant press [2].*

At step 122, the user 14 is prompted to speak his name.

*Say your complete name after the tone, and if you are calling for someone else also say the Patient's Name.*

The user's name is then stored in a user data record 124. At step 126, a schedule 128 is queried to determine when the doctor is available to make the call-back. The doctor initializes the schedule 128 by establishing a block of time in which he will perform patient call-backs, e.g., from 2:00 pm till 3:00 pm. Therefore, a potential call-back time, e.g., 2:30 pm, is retrieved and offered to the user 14.

*The next available call back appointment is Tuesday, June 26 at 2:30 PM. If this is OK press [1], if not OK press [2].*

At step 130, the user 14 is prompted to respond if the potential call-back time is acceptable. If the call-back time is not acceptable, execution proceeds to step 132 where the user is allowed to suggest another call-back time.

*Please enter a time when you can receive a call back. Enter the hour and the minute. Press [1] for AM and [2] for PM.*

At step 134 a determination is made as to whether the user-requested call-back time is acceptable to the schedule 128. If not, execution returns to step 126.

*A call back Appointment is not available at your requested time.*

*We have appointments available on Wednesday, June 27 or you may leave a voice mail about your medical concern.*

In this way, the user 14 and the DCU 18 "ping-pong" back and forth until a final schedule time is selected. In addition, additional control software can limit the amount of ping-ponging or simply force the user 14 to leave a voice message.

If at step 130 or step 134 an acceptable call-back time is determined, execution proceeds to step 136 where the time is stored in the user data record 124 and the schedule 128 is updated.

*You have scheduled a call-back appointment with Dr. Black at approximately 2:30 PM at 555-5678.*

Execution then returns to step 112.

If the user 14 at step 112 presses the number "2" on his telephone, indicating that he wishes to leave a voice mail for a doctor or nurse, execution proceeds to step 140. At step 142, the user 14 is prompted to speak his name. The user's name is then stored in the user data record 124. At step 144, the user 14 is provided with the potential recipients for the voice mail and is prompted to select one recipient.

*To leave a message for Dr. Black press [1], to leave a message for a nurse or physician assistant press [2].*



At step 146 the user 14 is directed into the recipient's voice mailbox (storage device 32) to record a voice message.

*Begin your message after the tone. If you are requesting a prescription, leave the name and phone number of your pharmacy. When finished press the # key in the lower right corner of your phone key pad.*

Also provided to the recipient's voice mailbox is the user's sign-in retrieved at step 108 as well as the time and date of the message. At step 148, the length of time of the voice message is stored in the user data record 124.

*The time used to leave your message was 3 minutes 45 seconds.*

Execution then returns to step 112.

If the user 14 at step 112 presses the number "3" on his telephone, indicating that he wishes to retrieve a response to a previous voice mail or other question, execution proceeds to step 160. At step 162, a determination is made as to whether any voice mail responses are available for the user 14.

*You have two responses to review.*

Such determination can be made through various methods, such as perusing all the potential voice mail responses to see if any are directed to the user sign-in as provided at step 108, above. If a voice mail response is available, execution proceeds to step 164 where the next voice mail response is retrieved. At step 166, the voice mail response is played to the user 14. At step 168, the user is prompted as to whether he would like to hear the voice mail response again.

*If you understand the response press [1]. To hear the response again press [3].*

If so, execution returns to step 166, if not, execution proceeds to step 170, where the length of time of the voice mail responses are stored in the user data record 124.

*The time used to listen to your message and leave a response was 4 minutes 20 seconds.*

If at step 162 a determination is made that there are no voice mail responses available, execution returns to step 112.

If at step 112 the user 14 presses the number "4" on his telephone, indicating that he wishes to hear the options again, execution returns to step 112. If the user 14 presses the number "5" on his telephone, indicating that he is ready to terminate the phone call, execution proceeds to step 176 in which the routine 100 stops.

The routine 100 can easily support different types of calls. For example, if at step 104 it is determined that the call was not a voice call, execution proceeds to step 190 where a determination is made as to whether the call is a fax. If so, execution proceeds to step 192 in which the fax is received. Also, certain flexibility can be

provided at this step. For example, the user 14 will not be charged for replaying a single voice mail response, and the doctor or nurse may indicate that the voice mail response is free, i.e., no time should be recorded or charged.

Referring to Fig. 5, a doctor interface routine 200 is performed by the DCU 18 to interact with the service provider (doctor). The doctor may interact with the DCU 18 directly through the user interface 50 (Fig. 2) or indirectly through the network interface 52, modem 42, IVR 46, or other means. Although not shown, a log-in procedure may be provided so that unauthorized users can not access any privileged information, so that the doctor may be identified from others capable of accessing the information, and/or to support remote log-ins.

At step 202, the schedule 128 is queried to find all of the interactions that are available to the doctor. For example, the doctor may be scheduled to call back the user 14. If such interaction is required, step 204 so notifies the doctor. Execution then proceeds to step 206 in which a menu of options is provided to the doctor. For the case in which the doctor is interacting with the DCU through another computer (not shown), the notification (step 204 and menu (step 206) may be displayed as a graphical user interface ("GUI"). The menu options are described below in Table 2. In response to the doctor selection, the routine 200 performs additional steps, as described below.

Table 2

Key	Option
1	the doctor wishes to call back one or more users.
2	the doctor wishes to receive a voice mail.
3	the doctor wishes to provide a response to a voice mail or other inquiry.
4	the doctor wishes to hear the options again.
5	the doctor is ready to terminate the routine.

If the doctor selects key "1", indicating that he wishes to call back one or more users, execution proceeds to step 210. At step 212, the schedule 128 (Fig. 4a), indicating the calls the doctor needs to return, is provided. The schedule may be displayed on a computer monitor connected to the DCU 18, may be faxed to the doctor through the fax 44, or provided to the doctor in some other manner.

Referring to Fig. 6, a GUI screen 300, which may be displayed on the computer monitor connected to the DCU 18, is one example of how the schedule 128 may be provided to the doctor. The screen 300 provides a list of times 302 and

patients 304 that the doctor is scheduled to call. Buttons 306, 308, 310, 312, and 314 allow the doctor, for a specific patient to retrieve a report from the lab 22, retrieve a medical chart updated by a nurse, another doctor, or the doctor himself, send a prescription to the pharmacy 26, call the patient, and get the patient's next voice mail, respectively. For example, a patient is first selected, such as patient S. Smith, and then by selecting the button 306, the doctor may review a lab report for S. Smith. The DCU 18 either had previously received the lab report, or in response to the button 306 being pressed, contacts the lab 22 to retrieve the lab report. The manner in which the lab report is provided to the doctor depends on the ability of the lab 22 and the DCU 18. For example, the lab 22 can simply fax the lab report to the doctor, who can then review it manually or scan it into his computer. Alternatively, the lab report can be electronically transferred directly to the DCU 18, and would thereby be immediately accessible on the computer monitor. In addition, the doctor may consult another service provider such as the clearing house 24, the pharmacy 26, or another doctor. Such consultations may also be billed to the caller's data record 124 at a predetermined rate.

Referring to both Figs. 5 and 6, at step 214, data is retrieved for the patient whom the doctor will be calling. The button 308 allows the doctor to retrieve the patient's medical history. The button 310 allows the doctor to automatically send prescriptions to the pharmacy 26. The button 312 allows the doctor to retrieve personal data of the patient, such as phone number, emergency contacts, etc. The button 314 allows the doctor to retrieve the next voice mail left by the particular patient. Buttons 316 provide backward and forward menu functions representing typical GUI operations. At step 216, the doctor calls the patient. If the doctor's computer has a built-in telephone, the button 312 may further allow the DCU 18 to dial the patient directly so that the call back can be provided through the doctor's computer. Alternatively, a conventional telephone (not shown) may be connected to the computer so that the computer can track the call time. Upon completion of the call, at step 218, the time of the call is recorded in the user data record 124.

Execution then returns to step 202.

Referring again to Fig. 5, if at the menu step 206 the doctor selects key "2," indicating that he wishes to receive a voice mail, execution proceeds to step 220. At step 222, the next voice mail message is retrieved from the storage device 32. At step 224, the voice mail message is played back to the doctor. It is understood that a schedule, similar to the screen 300 described above, may also be provided with this option. As a result, the doctor may retrieve data about the patient who has left the

voice mail message. Upon receipt of the voice mail message, execution proceeds to step 218. Since the length of the voice mail message was already stored and billed when the message was recorded (step 148, Fig. 4), it is not necessary to record the length again. However, it may be desired to not store and bill the message until the doctor actually has listened to it, i.e., to not execute step 148. Design flexibility is thereby provided for doctor customization.

In addition, different types of messages may be provided along with the voice mail messages. For example, hearing impaired patients may provide fax messages or e-mail messages for the doctor. Alternative billing arrangements may be determined for such messages, such as on a per-page or per-line basis. It is understood that many different communication methods may be equally applied, such methods being well understood and easily adapted to the present invention by one of ordinary skill in the art.

If at the menu step 206 the doctor selects key "3," indicating that he wishes to provide a response to a voice mail or other inquiry, execution proceeds to step 240. At step 242, data is retrieved relating to the call and/or patient. If the doctor is replying to a voice mail message, as discussed above, he may already have patient data available. However, if the doctor is replying to a fax or other type of message, this step provides the necessary data to support his response. At step 244 the doctor records his response in the storage device 32. As a result, the response is now available for later retrieval by the patient. Execution then proceeds to step 218 where the time of the doctors response is recorded in the user data record 124.

If at the menu step 206 the doctor selects key "4," indicating that he wishes to hear the options again, execution returns to step 206. If the doctor selects key "5," indicating that he is ready to terminate the doctor interface routine 200, execution proceeds to step 250 in which the routine stops.

Although not shown, the doctor interface routine 200 may support many additional functions. For example, it may allow the doctor to adjust or credit the number of minutes that will eventually be billed to a patient. It may support additional types of access to the patient information, such as internet access or pager access. It may offer different functions, or billing rates, for different doctors and/or office staff. For example, it may allow the doctor to charge for a consultation with a specialist, at a predetermined rate, to be added to the user data record 124. Furthermore, it may allow the doctor to interface directly with the pharmacy 26 for setting or checking on prescriptions, with the clearing house 24 for direct billing, or with the lab 22 for consultation and other inquiries.

Referring again to Fig. 3, on a periodic basis, the SCN 16 contacts the DCU 18. Various functions can thereby be performed. For one, the DCU server 68 can retrieve the user data record 124 (Fig. 4). The accounting server 62 may then calculate a bill according to the data in the user data record. For example, if the user 14 has compiled three telephone calls to the doctor, each lasting five minutes, and the billing rate for the user is five dollars per minute, the accounting server 62 may then calculate a bill for \$75 to be sent to the user. In the preferred embodiment, the user 14 will have already established a method of payment, such as through a credit card of the clearing house 24, so that the accounting server 62 may provide the bill directly to the clearing house server 70. The clearing house server 70 may then contact the clearing house 24 for payment. Once payment has been received, the payment can then be provided to the doctor in various manners, including electronic transfer or through a draft check. In the preferred embodiment, an agreement will have been established with the doctor and the SCN 16 so that a portion of the payment can be withheld by the SCN to pay for operating costs.

Another function to be performed by the SCN 16 is to update the doctor's information. For example, the database server 60 may maintain a current list of pharmacies, including telephone and insurance information for each pharmacy. In this way, the SCN 16 can download this information to the DCU 18 so that the doctor will also have correct pharmacy information.

It is understood that the information providers described above, as well as the scenarios associated therewith, are merely representative of many different applications. For example, functions performed through the PSTN 12 may alternatively be performed through the internet, a wireless network, or other communication network. Therefore, although illustrative embodiments of the invention have been shown and described, other modifications, changes, and substitutions are intended in the foregoing disclosure. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the scope of the invention.

## WHAT IS CLAIMED IS:

- 1     1.     A service provider interface unit comprising:  
2             a first interface section for communicating with a client of the service provider;  
3             a second interface section for communicating with the service provider;  
4             a central processor connected between the first and second interface sections;  
5     and  
6             a storage device connected to the central processor;  
7             wherein the central processor selectively calculates a length of time in which  
8     one of either the client or service provider spends communicating through the first or  
9     second interface section, respectively.
- 1     2.     The service provider interface unit of claim 1 wherein the central processor,  
2     upon calculating the length of time, records the length of time in the storage device  
3     in order to charge the client.
- 1     3.     The service provider interface unit of claim 1 wherein the first interface  
2     section includes an interactive voice response unit to which the client may call.
- 1     4.     The service provider interface unit of claim 1 wherein the central processor  
2     allows the client to provide voice mail messages to the service provider.
- 1     5.     The service provider interface unit of claim 1 wherein the central processor  
2     allows the client to receive voice responses from the service provider.
- 1     6.     The service provider interface unit of claim 1 further comprising:  
2             means for contacting a second service provider.
- 1     7.     The service provider interface unit of claim 6 wherein the service provider is a  
2     doctor's office and the second service provider is one of either a clearing house, a  
3     laboratory, or a pharmacy.
- 1     8.     An apparatus for scheduling appointments between a first and second user,  
2     the apparatus comprising:  
3             an interactive response unit for interfacing with the first user;  
4             a storage device for storing a schedule of the second user;

5 a processing device for analyzing the schedule to determine potential  
6 appointments, for receiving an accepted appointment from the first user, and for  
7 recording the accepted appointment in the schedule;

8 wherein, when the first user is interfacing with the interactive response unit,  
9 at least one potential appointment is provided by one of either the interactive  
10 response unit or the first user; and

11 wherein, after receiving the at least one potential appointment, the other of  
12 either the interactive response unit or the first user may indicate acceptance of the  
13 potential appointment in order to convert the potential appointment to the accepted  
14 appointment.

1 9. The apparatus of claim 8 further comprising:

2 means for notifying the second user of the accepted appointment.

1 10. The apparatus of claim 9 wherein the storage device also contains information  
2 about the first user so that for the accepted appointment, the means for notifying can  
3 also supply the information to the second user.

1 11. The apparatus of claim 8 further comprising:

2 a voice mail system so that the first user may leave a voice mail message for  
3 the second user.

1 12. The apparatus of claim 11 wherein the voice mail system also allows the  
2 second user to leave a message for the first user and wherein the interactive voice  
3 response unit allows the first user to retrieve the second user's message.

1 13. The apparatus of claim 8 further comprising:

2 a time measurement device that records a length of time the second user spent  
3 on the accepted appointment.

1 14. The apparatus of claim 13 wherein the appointment was for a telephone  
2 conference and the time spent includes the length of the telephone conference.

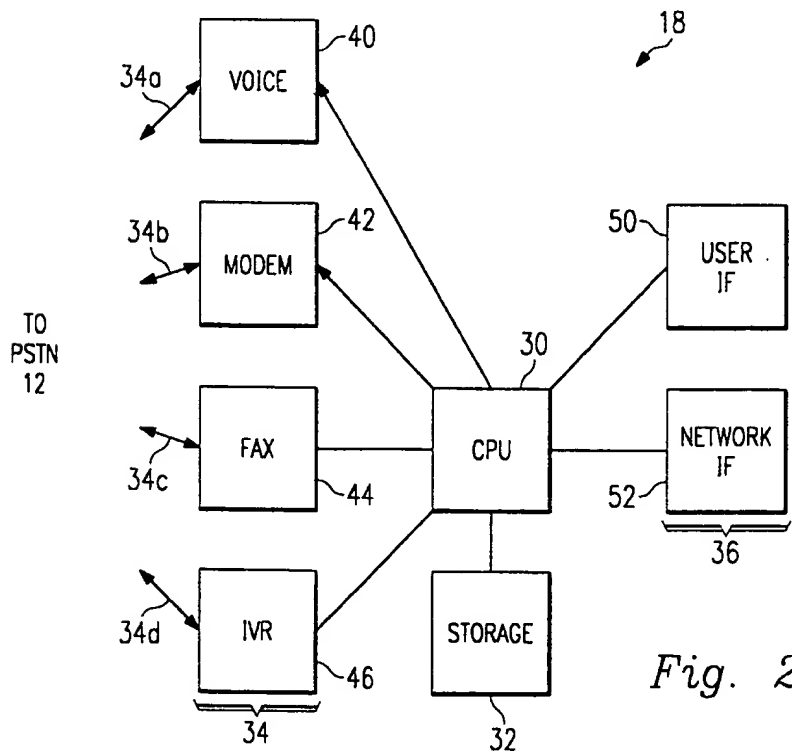
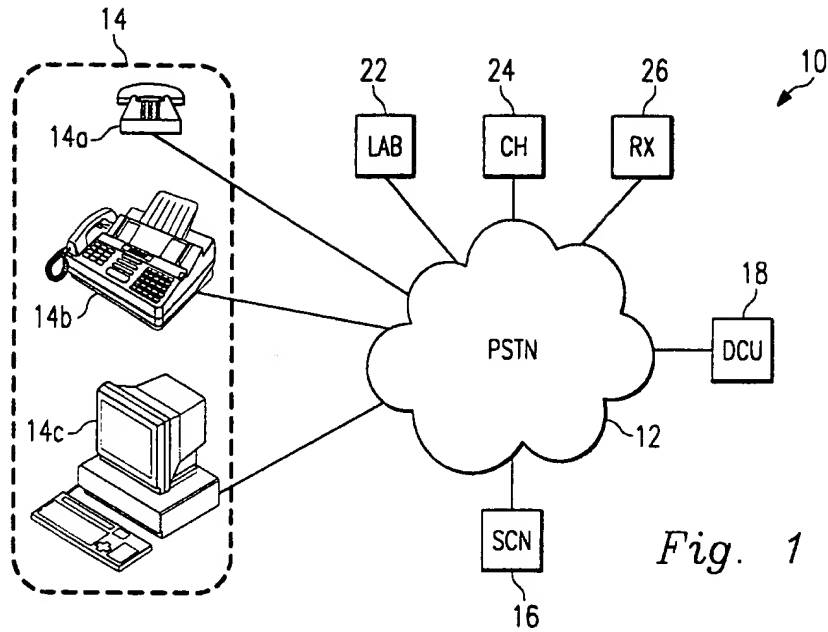
1 15. The apparatus of claim 13 wherein the appointment was for a reply message,  
2 the interactive voice response unit allows the first user to retrieve the reply message,  
3 and the time spent includes a length of the reply message.

- 1 16. The apparatus of claim 13 further comprising:  
2 a billing system for retrieving the length of time and creating a bill in  
3 response to the retrieved length of time.
- 1 17. The apparatus of claim 16 wherein the billing system is remote from the time  
2 measurement device.
- 1 18. An apparatus for supporting telephone conferences between a first and second  
2 user, the apparatus comprising:  
3 a time measurement device that records a length of time of the conference;  
4 and  
5 a billing system for retrieving the length of time of the conference and creating  
6 a bill in response to the retrieved length of time;  
7 wherein the billing system is remote from the time measurement device and  
8 wherein the length of time of the conference is less than a length of time a call made  
9 to initiate the conference.
- 1 19. A method for supporting communication between a service provider and a  
2 client, the method comprising the steps of:  
3 storing a schedule of available appointments for the service provider;  
4 receiving confirmation from the client for one of the available appointments;  
5 notifying the service provider of the confirmed appointment;  
6 providing information about the client to the service provider to facilitate the  
7 appointment; and  
8 recording the actual length of time for the appointment.
- 1 20. The method of claim 19 further comprising:  
2 calculating a bill for the client according to the recorded length of time; and  
3 notifying the client of the bill.
- 1 21. The method of claim 19 further comprising:  
2 calculating a bill for the client according to the recorded length of time; and  
3 requesting payment for the bill from a clearing house.



- 1 22. The method of claim 21 wherein the client has established payment  
2 authorization between the service provider and the clearing house.
- 1 23. The method of claim 19 wherein the appointment is for an in-person  
2 interview.
- 1 24. The method of claim 19 wherein the appointment is for a reply message from  
2 the service provider.
- 1 25. The method of claim 19 wherein the service provider is a doctor and the client  
2 is a patient.

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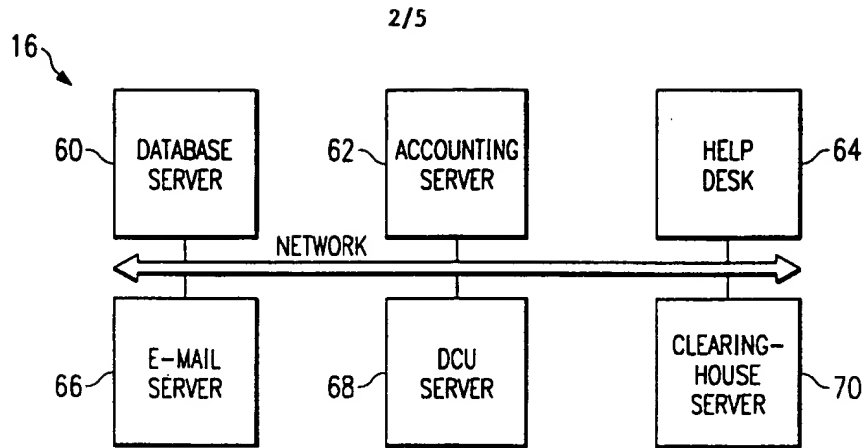


Fig. 3

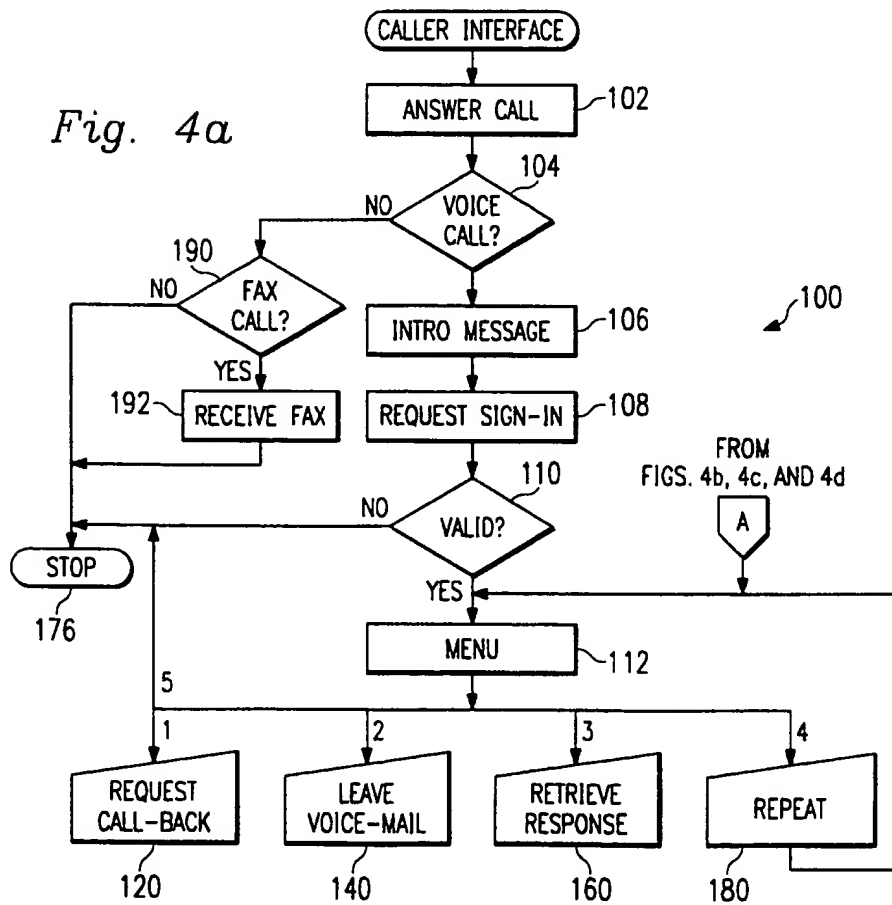


Fig. 4b

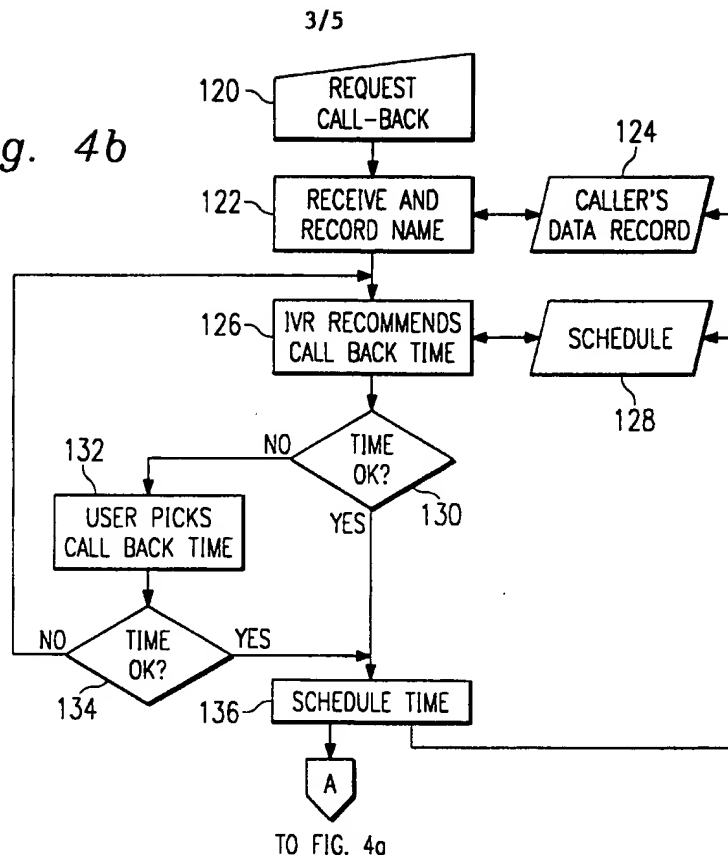
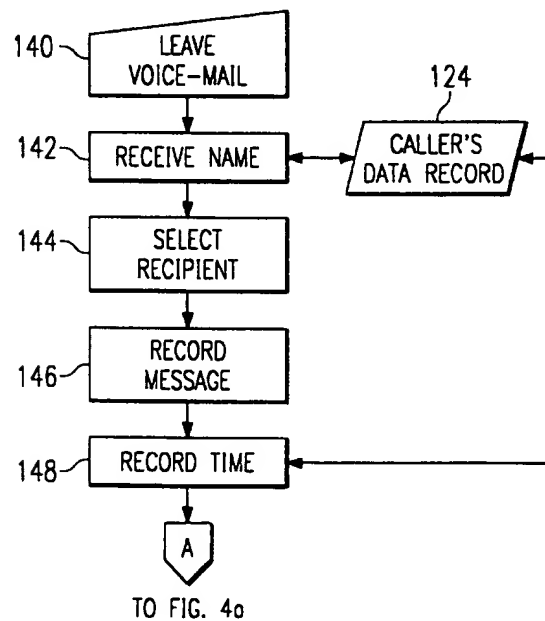
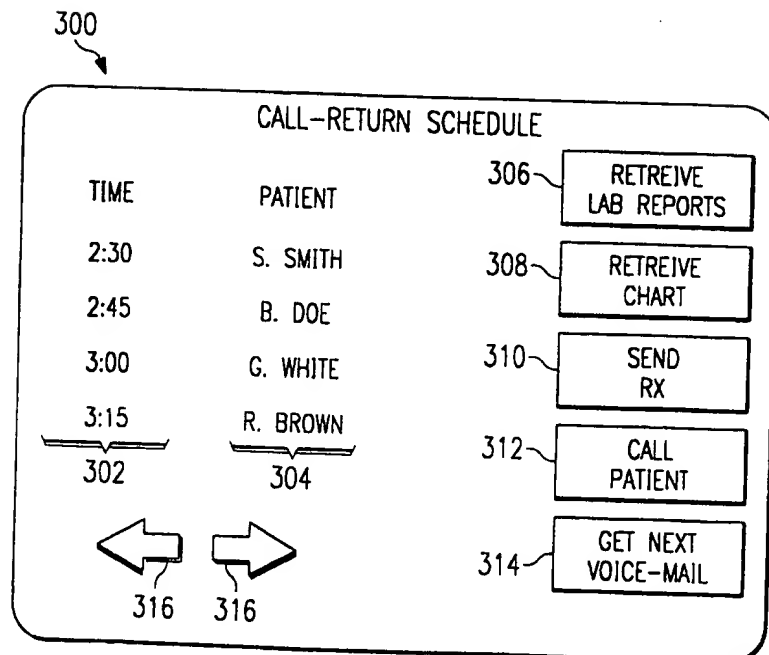
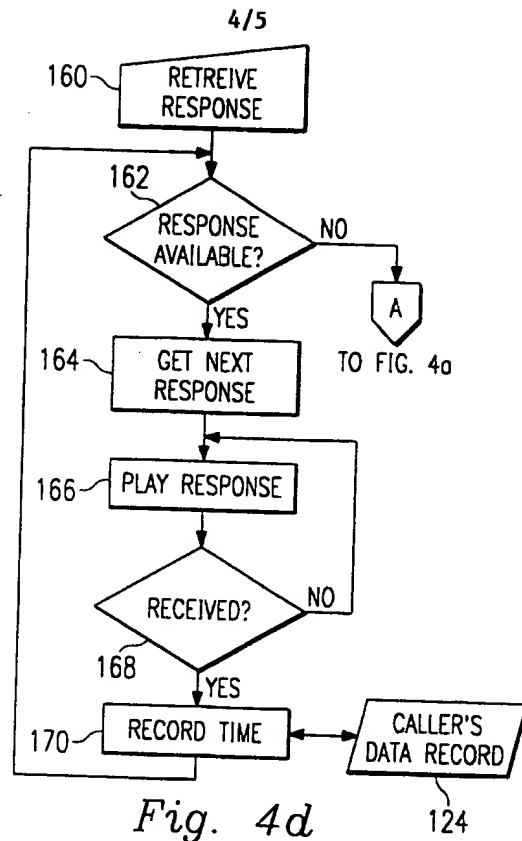


Fig. 4c





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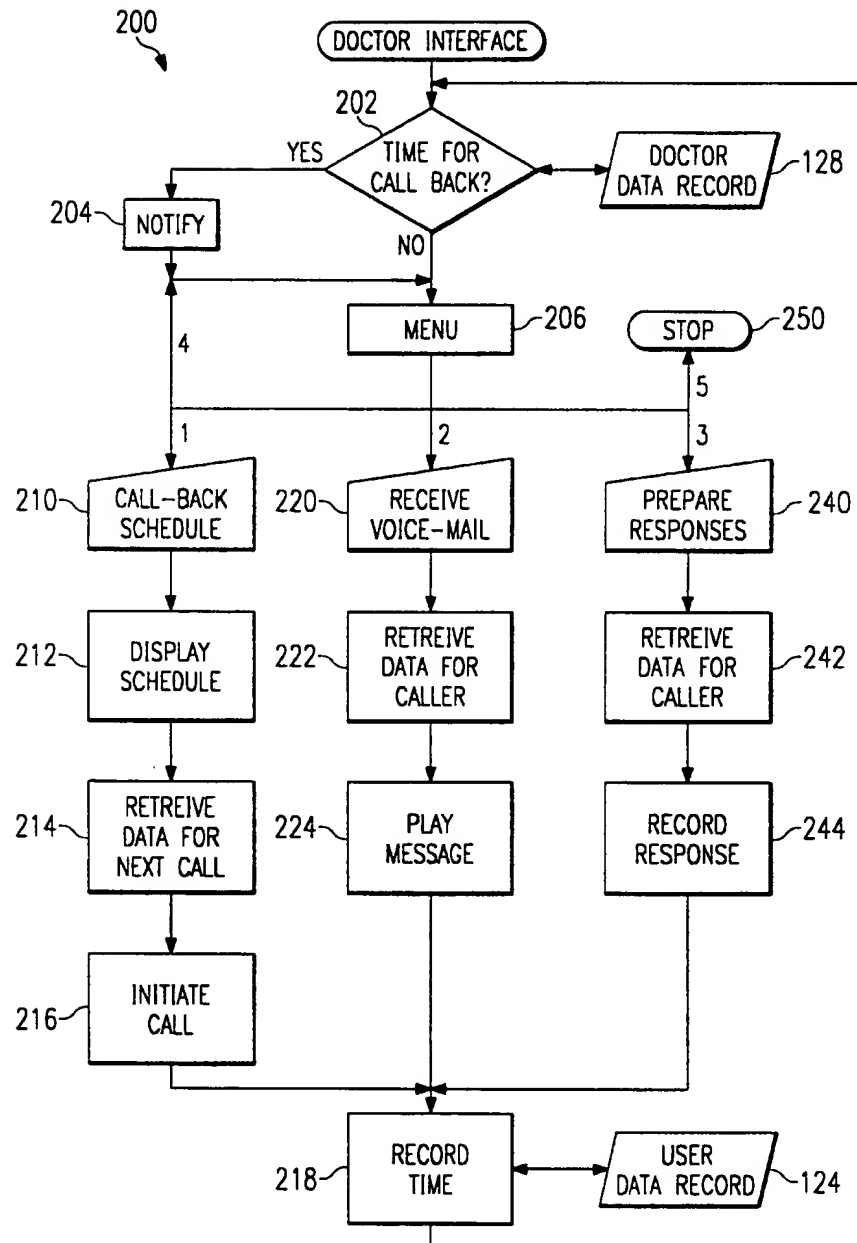


Fig. 5

## INTERNATIONAL SEARCH REPORT

 International application No.  
PCT/US98/17791

## A. CLASSIFICATION OF SUBJECT MATTER

 IPC(6) :H04M 1/64, 11/00, 15/00, 17/00  
 US CL :Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 379/67.1, 88.09, 88.11, 88.13, 88.25, 90.01, 91.01, 93.03, 93.14, 93.23, 100.04, 100.06, 100.08, 112, 114, 120, 131, 145

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,783,800 A (LEVINE) 08 NOVEMBER 1988, SEE ENTIRE DISCLOSURE.	8-12.
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Y		1-7 AND 13-25.
Y	US 5,495,284 A (KATZ) 27 FEBRUARY 1996, SEE ENTIRE DISCLOSURE.	1-7 AND 13-25.
Y	US 5,519,766 A (JONES) 21 MAY 1996, SEE ENTIRE DISCLOSURE.	15
X	US 4,969,136 A (CHAMBERLIN ET AL.) 06 NOVEMBER 1990, SEE ENTIRE DISCLOSURE.	8-12.
A	US 5,155,761 A (HAMMOND) 13 OCTOBER 1992, SEE ENTIRE DISCLOSURE.	1-25.

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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Date of the actual completion of the international search

22 NOVEMBER 1998

Date of mailing of the international search report

04 JAN 1999

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INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US98/17791

A. CLASSIFICATION OF SUBJECT MATTER:  
US CL :

379/67.1, 88.09, 88.11, 88.13, 88.25, 90.01, 91.01, 93.03, 93.14, 93.23, 100.04, 100.06, 100.08, 112, 114, 120, 131, 145



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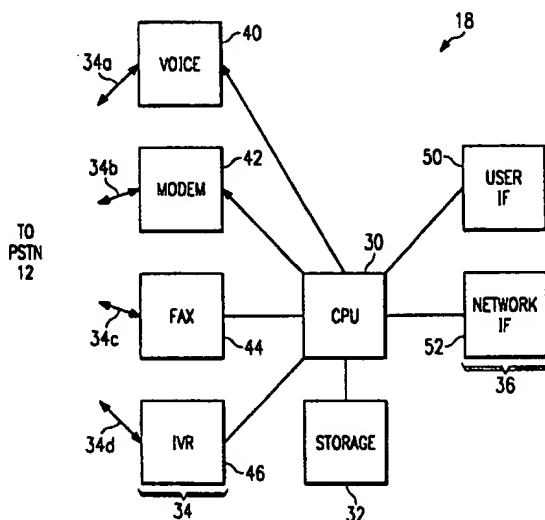
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International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>H04M 1/64, 11/00, 15/00, 17/00</b>		A1	(11) International Publication Number: <b>WO 99/11049</b>
			(43) International Publication Date: 4 March 1999 (04.03.99)
(21) International Application Number: PCT/US98/17791			(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
(22) International Filing Date: 25 August 1998 (25.08.98)			
(30) Priority Data: 08/921,998 27 August 1997 (27.08.97) US			
(71) Applicant: PHYTEL, INC. [US/US]; Suite 350, 7075 Twin Hills Avenue, Dallas, TX 75231 (US).			
(72) Inventors: SMILEY, J., Neil; 6507 Desco Drive, Dallas, TX 75225 (US). SMILEY, J., Donald; 6223 Stephani, Dallas, TX 75225 (US).			
(74) Agents: O'DELL, David, M. et al.; Haynes and Boon, L.L.P., 901 Main Street, 3100 NationsBank Plaza, Dallas, TX 75202-3789 (US).			Published With international search report. With amended claims.  Date of publication of the amended claims: 15 April 1999 (15.04.99)

(54) Title: COMMUNICATIONS SYSTEM FOR A SERVICE PROVIDER



(57) Abstract

An integrated, electronic communications system (18) that provides an intelligent interface between a client, a service provider and a network. The system (18) includes a storage device (32) for storing appointment schedules and an interactive voice response unit ("IVR" 46) for interfacing with the client. The IVR (46) enables the client to schedule an appointment either by selecting or submitting his own appointment. The system (18) can confirm an appointment, provide information about the client to the service provider or provide voice mail interaction between the client or the service provider. The system (18) includes a time measurement device (30) that records call duration for an interaction between the service provider and the client for purposes such as billing. The interaction may be a telephone appointment, an in-person appointment, or a voice mail transaction.

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## AMENDED CLAIMS

[received by the International Bureau on 2 March 1999 (02.03.99);  
original claims 1-8, 10, 15, 18, 19, 23 and 24 amended; remaining claims unchanged (4 pages)]

- 1 1. A service provider interactive unit comprising:
  - 2 an automated client interactive unit for communicating with a client of a service
  - 3 provider and providing the client a plurality of client functions including at least one from
  - 4 the group consisting of: request a call back, leave a voicemail and retrieve a recorded
  - 5 response;
  - 6 a service provider interface for communicating with the service provider and providing
  - 7 the service provider with a plurality of service provider functions including at least one from
  - 8 the group consisting of: a call back schedule, playing voicemails and preparing responses;
  - 9 a central processor connected between the automated client interactive unit and the
  - 10 service provider interface, wherein the central processor creates a record of use for at least
  - 11 one of the group consisting of: the automated client interactive unit and the service provider
  - 12 interface; and
  - 13 a storage device connected to the central processor for storing the record of use.
- 1 2. The service provider interactive unit of claim 1 wherein the record of use is used to bill
- 2 the client.
- 1 3. The service provider interactive unit of claim 1 wherein the automated client interface
- 2 unit includes an interactive voice response unit.
- 1 4. The service provider interactive unit of claim 1 wherein the plurality of client functions
- 2 includes at least two from the group consisting of: request a call back, leave a voicemail and
- 3 retrieve a recorded response.
- 1 5. The service provider interactive unit of claim 1 wherein the plurality of service provider
- 2 functions includes at least two from the group consisting of: a call back schedule, playing
- 3 voicemails and preparing responses.
- 1 6. The service provider interactive unit of claim 1 further comprising:
- 2 a means for contacting a second service provider.

1 7. The service provider interactive unit of claim 6 wherein the service provider is a doctor's  
2 office and the second service provider is selected from the group consisting of: a clearing  
3 house, a laboratory, and a pharmacy.

1 8. An apparatus for scheduling call-back appointments between a first and second user, the  
2 apparatus comprising:  
3 an interactive response unit for scheduling the first user with the second user by the first  
4 user accepting a call-back appointment provided by one of either the interactive response  
5 unit or the first user;  
6 a storage device for storing a schedule of the second user;  
7 an authentication device that validates the first user before scheduling the first user with  
8 the second user; and  
9 a processing device for analyzing the schedule to determine potential appointments, for  
10 receiving an accepted appointment from the first user, and for recording the accepted  
11 appointment in the schedule.

1 9. The apparatus of claim 8 further comprising:  
2 means for notifying the second user of the accepted appointment.

1 10. The apparatus of claim 9 wherein the storage device also contains information about  
2 the first user and the means for notifying supplies the information to the second user for the  
3 accepted call-back appointment.

1 11. The apparatus of claim 8 further comprising:  
2 a voice mail system so that the first user may leave a voice mail message for the second  
3 user.

1 12. The apparatus of claim 11 wherein the voice mail system also allows the second user to  
2 leave a message for the first user and wherein the interactive voice response unit allows the  
3 first user to retrieve the second user's message.

- 1 13. The apparatus of claim 8 further comprising:  
2 a time measurement device that records a length of time the second user spent on the  
3 accepted appointment.
- 4 14. The apparatus of claim 13 wherein the appointment was for a telephone conference and  
5 the time spent includes the length of the telephone conference.
- 1 15. The apparatus of claim 13 wherein the appointment was for a reply message, the  
2 interactive voice response unit allows the first user to retrieve the reply message, and the  
3 time spent includes a length of the reply message and a length of time the second user spent  
4 on listening to an incoming message from the first user.
- 1 16. The apparatus of claim 13 further comprising:  
2 a billing system for retrieving the length of time and creating a bill in response to the  
3 retrieved length of time.
- 1 17. The apparatus of claim 16 wherein the billing system is remote from the time  
2 measurement device.
- 1 18. An apparatus for supporting call-back telephone conferences between a first and second  
2 user where the first user schedules the call-back conference with the second user, the  
3 apparatus comprising:  
4 an interactive response unit for providing a call-back telephone conference appointment  
5 for a first user and a second user;  
6 a time measurement device that records a length of time of the call-back telephone  
7 conference; and  
8 a billing system, remote from the time measurement device, for retrieving the length of  
9 time of the call-back telephone conference and creating a bill in response to the retrieved  
10 length of time.

- 1 19. A method for supporting communication between a service provider and a client, the  
2 method comprising the steps of:  
3 storing a schedule of available call-back appointments for the service provider;  
4 receiving confirmation from the client for one of the available call-back appointments;  
5 notifying the service provider of the confirmed appointment;  
6 providing information about the client to the service provider to facilitate the call-back  
7 appointment; and  
8 recording the actual length of time for the call-back appointment.
- 1 20. The method of claim 19 further comprising:  
2 calculating a bill for the client according to the recorded length of time; and  
3 notifying the client of the bill.
- 1 21. The method of claim 19 further comprising:  
2 calculating a bill for the client according to the recorded length of time; and  
3 requesting payment for the bill from a clearing house.
- 1 22. The method of claim 21 wherein the client has established payment authorization  
2 between the service provider and the clearing house.
- 1 23. The method of claim 19 wherein the schedule further includes non-telephonic  
2 appointments.
- 1 24. The method of claim 19 further including validating the client before scheduling a call-  
2 back appointment.
- 1 25. The method of claim 19 wherein the service provider is a doctor and the client is a  
2 patient.